

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A fuel cell assembly comprising:
at least one fuel cell comprising:
an anode and a cathode, each having an inlet and an exhaust;
an electrolyte interposed between the anode and the cathode;
a fuel passage in fluid communication with the anode for directing a fuel stream to and from the anode; and
an oxidant passage in fluid communication with the cathode for directing an oxidant stream to and from the cathode; and
a gas sensor operably associated with the fuel passage for measuring the concentration of hydrogen gas in the fuel stream, wherein the fuel passage is the anode exhaust passage, the sensor comprising a sound generator and a sound detector.
2. (Original) The fuel cell assembly of claim 1 wherein the sound generator is a transducer.
3. (Original) The fuel cell assembly of claim 2 wherein the sound generator is a piezoelectric transducer.
4. (Original) The fuel cell assembly of claim 1 wherein the sound detector is a transducer.
5. (Original) The fuel cell assembly of claim 4 wherein the sound detector is a piezoelectric transducer.

6. (Original) The fuel cell assembly of claim 4 wherein the sound generator is a transducer.

7. (Original) The fuel cell assembly of claim 1 wherein the gas sensor further comprises a temperature sensor.

8. (Canceled)

9. (Original) The fuel cell assembly of claim 1 further comprising a recirculating fuel line for directing the fuel stream from the anode exhaust back to the anode inlet.

10. (Original) The fuel cell assembly of claim 9 further comprising a purge valve for directing the fuel stream to either the recirculating fuel line or the external atmosphere.

11. (Original) The fuel cell assembly of claim 9 further comprising a liquid separator in the recirculating fuel line.

12. (Original) The fuel cell assembly of claim 9 further comprising a recirculation device in the recirculating fuel line.

13. (Currently Amended) A method of operating an electrochemical fuel cell system having an anode and a cathode, the method comprising:

directing an oxidant stream to and from the cathode;

directing a hydrogen stream to and from the anode;

determining the concentration of hydrogen in the hydrogen stream by:
generating a sound in the fuel stream passage; measuring an acoustic property of the sound; and
calculating the hydrogen concentration based on the measured acoustic property, wherein the hydrogen stream is the anode exhaust.

14. (Original) The method of claim 13 wherein the acoustic property is the speed of sound.

15. (Original) The method of claim 13 wherein the acoustic property is the frequency of sound.

16. (Canceled)

17. (Currently Amended) The method of claim 13 ~~claim 16~~ wherein the electrochemical fuel cell system comprises a recirculating fuel line, the method further comprising purging the anode exhaust when the measured hydrogen concentration falls below a predetermined threshold.

18-22. (Canceled)